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ABSTRACT

The spread of New Information Technologies (NITs) to every sector of the economy has far reaching implication for the design of jobs, for patterns of work organization, and for vocational educational training systems. The full potential of the NITs is however being restricted by chronic skills shortages, particularly of high level NIT skills. Women will comprise a more significant proportion of the European Community (EC) labor force in the future, but they have traditionally been clustered at the bottom of the ladder in a limited number of industrial sectors. This report addresses three main issues: the extent to which the shake up in the work organization will facilitate better use of women as a resource; barriers to women filling the skill shortages in NITs; and how these barriers could be overcome. The report is divided into seven sections: (1) Introduction; (2) Barriers to Women's Employment (the gendering of jobs, child care and domestic commitments, qualifications); (3) Skill and the NITs (deskilling, upskilling and polarization; the "new pedagogics"; the social construction of skill); (4) Skill Shortages in the NITs (technicists, "hybrids" or "business analysts"); (5) Women's Employment and the NITs (gendered subject choice at school, qualifications and segregation, discrimination in employers' recruitment and promotion practices); (6) Women's Training in the NITs (the androcentricity of training provision, women returners' training needs, confidence building, women-only training, female tutors for NITs); and (7) Conclusion and Recommendations. The recommendations focus on ways in which women's access to training in NITs might be facilitated by school based education, vocational education training (VET) systems, and employers. Three tables display data on women's and men's employment in the EC; women's training and the European Social Fund; and students in IT related degree and postgraduate degree courses in the EC. (Contains 48 references.) (ALF)

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SKILL SHORTAGES, WOMEN AND THE NEW INFORMATION TECHNOLOGIES

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Report of the Task Force for Human Resources, Education, Training and Youth, Unit 3

Commission of the European Communities

January 1992

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The schoolgirls were intrigued by the woman production engineer, a role model at the training roadshow, but all they asked her was

"Are you really an engineer ?"

"Yes", she replied "Why do you ask ?"

"Because you've got a handbag."

(Rees 1989)

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PREFACE

The spread of New Information Technologies (NITs) to every sector of the economy has far reaching implications for the design of jobs, for patterns of work organisation and for vocational and educational training systems. The full potential of the NITs is however being restricted by chronic skills shortages, particularly of high level IT skills. Women will comprise a more significant proportion of the EC labour force in the future, but they have traditionally been ghettoised in a limited number of industrial sectors, and clustered at the bottom of the rung in those sectors. To what extent will the shake up in work organisation facilitate better use of women as a resource ? What are the barriers to women filling the skill shortages in NITs and what could be done to overcome them ?

This report addresses these issues. It was commissioned by the EC's Taskforce of Human Resources, Education, Training and Youth, following on from their major project "Macro-Economic and Sectoral Analysis of Future Employment and Training Perspectives in the new Information Technologies in the European Community". It draws upon studies conducted for that project, in particular Bowen and Senker (1990); Ducatel and Miles (1990); Freeman and Soete (1990) and Rees (1990). The evidence on NITs and training systems within individual members states is patchy : far more is known about France, Germany and the UK than other members states, and material from some countries, such as Greece, is particularly scarce (see Rees 1990).

The report outlines barriers to women's employment generally, to the NITs and to specific skill shortages. The conclusion identifies ideas for encouraging women's access to routes that lead to those shortages.

1. INTRODUCTION

Skill shortages are increasingly being identified as an impediment to the exploitation of new information technologies (NITs) and as a consequence to the international competitiveness of the EC and its constituent member states. Moreover, demographic changes imply a growing dependence upon women as a source of labour in the future, and they are less likely than men to be qualified in subjects relevant to the NITs, or to be employed in those areas where there are already chronic skill shortages. Indeed, research evidence from many EC member states reports an increasing bifurcation of skill level between men and women as a result of the introduction and development of new technologies. This is clearly a cause for concern. What are the barriers to women's recruitment to NIT training and employment ? What policies could be introduced or supported to encourage women to enter NITs generally, and those areas of skill shortages specifically ? How might training providers, employers and others adapt their policies and practices to facilitate their entry ?

This report seeks to address these questions. There are three categories of explanation, those which explore women's lack of access to senior positions more generally, those which account for women's lack of penetration to information technology broadly (except at the lowest levels), and those which examine barriers to women's access to those specific jobs identified as skill shortages in NITs. The explanations cross cut one another.

The main focus of the repoort is on women and NITs skill shortages but explanations for the lack of women in the higher echelons of professions more generally are relevant to policy development. Women's access to skills identified as being in short supply in NITs cannot be isolated from more general structures and processes which lead to a work force which is highly segregated by gender. The under-utilisation of female resources in the Community is well documented and is clearly both a social justice issue and increasingly an economic one. The report examines key blockages in education, training and work organisation systems which lead to this wastage and explores training initiatives aimed at facilitating women's access to the NITs.

Every age imagines that the speed of technological and social change to be unprecedented, and this age is no exception. The influence of NITs is increasingly all-pervasive, both at work and at home. Industries rely on NITs in order to be more efficient, to improve the quality of products and services and to increase access to information. There is a growing emphasis on customer care, quality assurance and the more flexible "Just-in-time" production systems rather than Tayloristic mass production. The consequence of these changes is a radical shift in patterns of work organisation for many employers. This provides an opportunity for changing the nature of so many low skilled, boring repetitive jobs which are disproportionately undertaken by women, particulary migrant women.

The NITs, combined with other changes in the labour market create opportunities, then, for re-shaping patterns of work organisation to allow employees more scope for using their potential in their jobs. This necessarily implies a much more important role for training, in particular continuing training. The evolution of job content for many employees means that initial training will no longer suffice as a preparation for a working life. When children are asked what they would like to be when they grow up, in the future they will need to imagine a series of job, or jobs with a changing content, interspersed with training. Children planning to become engine drivers will find some trains no longer have need of them ! Continuing training will need to become a reality and expectation for workers and employers. Given that between now and the end of the century increased reliance will be put upon women already of working age, and given that they are less likely to be trained than men, there is considerable work to be done in adapting training provision to be suitable for their needs. This work will be invaluable for understanding how to modify training for older people more generally.

To what extent are NITs and other challenges opening up opportunities, and to what extent are existing patterns of "job gendering" simply overlaying the new technologies, limiting the use made of them, and stifling the potential they can offer ? Many domestic users of NITs use their microwaves simply to defrost, use only one or two settings on their washing machine, and are ignorant of the funtions of many of the buttons on their video recorder. So too, business managers may be ignorant of the scope of NITs, but with much more serious consequences. Such ignorance can lead to deskilling rather than upskilling, with women in particular finding their jobs less rewarding instead of more challenging. Such short-sightedness exacerbates existing skill shortages.

The report begins by exploring barriers to women's access to employment more generally before focusing on the NITs and identified skill shortages. It concludes with suggestions for policy.

2. BARRIERS TO WOMEN'S EMPLOYMENT

Women are likely to have fragmented work histories because of their domestic commitments, and they are to be found in a relatively narrow range of industries and occupations, frequently working on a part-time or temporary bases. Three-quarters of women in the European Community work in the service sector (see Table 1), many of whom are in low paid jobs in catering, cleaning, and retail. Moreover, much of the work undertaken by women is not included in labour force statistics; it may take the form of unrecorded homeworking or supporting a family business.

Women are less likely to have qualifications and skills learned through training than men. They face additional, well documented difficulties in both entering male dominated industries, and in "breaking the glass ceiling", an invisible barrier which prevents their rise to the upper echelons of their occupation or profession, a glass ceiling they cannot see, but whose effects they can feel. This section briefly identifies those factors which lead to the

segregation of women in the labour force generally, but keep them out of IT work, and high level IT careers especially.

i) The Gendering of Jobs

Gender segregation at work, both horizontally (whereby men and women tend to work in different industries and occupations within those industries, women in particular working in a narrow range of jobs) and vertically (whereby women are clustered at the bottom of occupational hierarchies) is the single most significant determinant of the differences between women and men's access to training, promotion and equal pay (Walby 1990). Patterns of segregation remain remarkably consistent despite legislation, the demands of the Women's Movement and a generally more enlightened awareness of the desirability of equal opportunities.

It might be argued that the new jobs evolving as a result of the NITs might provide opportunities to break down the rigidities of segregation; there is not the history of association of one or other gender with a specific job for school leavers, employees and employers to challenge. Moreover, there is less need for brawn and more for brain, and jobs associated with NITs have a clean image compared with some of the older male dominated industries, such as steel and coal. Nevertheless, new systems of segregation are already emerging within the NITs, and gender remains a potent organising principle that survives the shifts and changes that organisations are experiencing as a result of their introduction.

Table 1

Women and Men's Employment in the European Community : Key Figures (Millions and Percentages)

	Women	Men
Total Population	167.3	158.8
Total Employment	51.4	81.2
Total Unemployment	6.7	6.0
Unemployment rate	11.9 %	7.0 %
Youth (14-24) Unemployment rate	20.1 %	14.9 %
Employment in :		
Agriculture	3.3	6.1
Industry	9.7	31.9
Services	37.0	42.5
Share of employment in :		
Agriculture	6.6 %	7.6 %
Industry	19.3 %	39.6 %
Services	74.1 %	52.8 %

Source : Extracted from Commission of the European Communities (1990) Employment in Europe 1990 Belgium : Directorate General for Employment, Industrial Relations and Social Affairs.

Women in NITs tend to be concentrated in very low level work, as Connor and Pearson (1986 : 75) report in a study of the UK :

> The IT profession is characterised by a low representation of women, although large numbers of women are employed in IT at lower levels on data input and electronics assembly operations. Women typically represented only 1-2 % of a company's electronic engineers, although they could be as much as 10 % in the larger electronics and telecoms groups. In software jobs, the proportion of women was generally higher, averaging 15-20%.

Despite the scope afforded by new technologies for changing jobs and reducing the amount of segmentation and gender segregation in the labour market, there is little evidence of this happening as yet. New patterns of gender segregation are simply emerging within the new technologies : indeed IT is more gendered now than it was in the 1960s. Whereas computing attracted large numbers of women in the early days, particularly as computer programmers, it has since become "defiminised".

ii) Child-care and Domestic commitments

Women bear the major burden of domestic commitments, even when both partners are working, according to a British study (Gershuny et al 1986). Moreover, the numbers of single parents is increasing in the Community. Women are far more likely to have a break or series of breaks in their working lives, and their work histories will be related to the availability of affordable child-care. Indeed, Denmark and the UK have the highest rates of part-time employment among women in the EC : they also have, in the case of Denmark, a school day which ends at 1 o'clock, and in the case of the UK, almost the lowest level of pre-school child-care in Europe (Cohen 1990, Moss 1990).

Anticipation of a career break clearly informs young girls' aspirations for their working life. The issue of child-care is a fundamental one if women are to be able to participate in training for IT and to be able to take up employment. Training providers and of course employers will increasingly need to take on board the fact that their employees may well be parents as well as workers. However, without more men becoming active parents, expecting women to take a more active part in work will merely be adding to their existing load. The EC, through a number of draft directives and through the NOW (New Opportunities for Women) initiative is addressing the issue of parenthood and child-care : but employers and training providers will need to become "family-friendly" (as increasingly firms in the US are finding it behoves them to do - see Berry-Lound 1990) if they are serious about wanting to employ women in NITs.

As IT companies themselves tend to be male territories, they are not at the forefront of employers developing child-care policies which facilitate the combination of work with family life. As NITs increasingly pervade all kinds of sectors, women may be assisted by policies introduced to retain increasingly expensively trained employees who could otherwise take a career break. Flexitime, time off for care of sick dependents, career break schemes, job sharing

and job-splitting schemes, the freedom to work part-time hours in senior jobs : these "positive action" schemes will assist all women, including those aspiring to fill NITs skill shortages.

iii) Qualifications

Women have less access to training than men, and the training they do receive tends overwhelmingly to lead to jobs traditionally done by women. They comprise less than half the undergraduate population overall and considerably less than half the post-graduate population in the EC. They receive only 39 % of European Social Fund supported trainee places (see Table 2). In those courses particularly associated with the NITs, they remain in a minority, ranging from just over a third of all students in the EC in natural sciences, under a third in Mathematics and Computing, and only 9.0 % in engineering (see Table 3). There are variations in the different member states, women in Portugal and Italy faring the best.

Table 2

Women's Training and the European Social Fund

Country	Number of Female Trainees	Females as a % Total trainees
Belgium	15,637	46.3 %
Denmark	10,124	49.2 %
Germany	38,167	47.1 %
Greece	107,394	40.8 %
Spain	211,590	31.8 %
France	95,490	42.1 %
Ireland	69,874	43.3 %
Italy	197,872	37.3 %
Luxembourg	1,339	31.6 %
Netherlands	8,055	33.6 %
Portugal	112,207	39.0 %
UK	354,456	43.7 %
EC	1,222,205	39.3 %

Source : Extracted from Table 5.7 Commission of the European Communities (1989) "Women in Graphics" Women of Europe Supplement N° 30. Original Source : Sixteenth Report on the Activities of the European Social Fund, Financial year 1987, COM (88) 701 final, Appendix Pages 40 - 51.

Table 3

Students in IT Related Degree and Postgraduate Degree Courses in the EC : Percentage Women

Country	Natural Sciences	Mathematics and Computer Science	Engineering
Belgium (combined)	39.6		11.9
Denmark	30.4	22.9	12.0
FRG	30.9	23.6	6.5
Greece	37.0	36.0	19.7
Spain	45.5	37.5	10.7
France	32.5	17.0	16.1
Italy	53.4	43.3	54.7
Netherlands	23.0	14.4	8.4
Portugal	63.8	54.0	22.0
UK (combined)	32.1		8.7
Europe 12	36.6	30.0	9.0

Source : Calculated from Tables 4 and 5, Eurostat (1988) Rapid Reports : Population and social conditions (occasional), 1988 : 1 Full Time Education in the European Community in 1985/6 Luxembourg, Eurostat.

Notes : No figures available for Ireland and Luxembourg. These headings refer to ISCED Fields 42, 46 and 54. Figures include full and part-time students.

Women are less likely to be sponsored by their employers for training of more than a few days. One reason for their failure to penetrate both the upper echelons, and male dominated industries has been their relative lack of qualifications. As Rees (1990 : 15) reported :

> ... Whatever progress has been made towards achieving greater equality between the sexes in general education, it remains overwhelmingly the case that women are under-represented at all levels (and especially in post-compulsory education) in those disciplines which are most closely associated with new ITs - computing, mathematics, physics and engineering (OECD 1986).

Indeed in the UK, the numbers of women on computer courses at universities has actually been declining : university admissions reveal a fall in female students in IT related subjects from 26 % in 1979 to 14 % in 1986 (Plaazer 1988). In 1989, women formed only 12.7 % of new graduates with first degrees in computing. Training is a particular issue facing women returning to work after a period of child-rearing where their skills may be out dated because of technological change, and their confidence may have eroded, effecting their ability to learn.

3. SKILL AND THE NEW INFORMATION TECHNOLOGIES

The concept of skill is conceptually complex. Rees (1990 : 32) differentiated between skills that a vocational and education training (VET) system can produce which comprise technical competences whose content and level matches requirements of employers, and skills which may be wholly specific to an individual firm. VET systems tend to produce highly transferable skills : in-firm training would be more context specific.

i) Deskilling, Upskilling and Polarisation

Various writers have debated whether labour market changes such as the expansion of the service sector, the need for "flexibility" of workers and the increased development and use of NITs will lead to deskilling, upskilling or further polarisation of the skill content of jobs (Ducatel and Miles 1990 : 73 -75; Gallie 1991). On the whole the support seems to be for the more optimistic view, that is employees report an increase in their skill level, but there is evidence too of polarisation of skills, particularly in the IT and service sectors, and a deeper gender divide as a consequence.

This is a complex area, with considerable sectoral and spatial specificities, and has in any case been tackled in other reports for this project. The point that I want to stress here is the gender dimension, that is, patterns of work organisation adopted by management can effect the skill level of male and female workers in different ways. Technology need not be deterministic : employers have the role of agency or actor in designing patterns of work organisation, and there has been considerable interest in the EC in encouraging worker participation in that design. Part of the mesh of social processes which helps to determine what patterns emerge

are attitudes towards women. Managements which hold stereotypical views about the capabilities of women under-use them. Women respond to that by taking that identity of an unskilled, unvalued person upon themselves; they lose confidence as a result and their lack of ability to learn new technologies becomes a self-fulfilling prophecy.

ii) The "New Pedagogics"

The NITs allow a rethink on work organisation tied to previous technologies, but they imply too a need for different skills for workers, both manual and non-manual in addition to technical skills. Training for NITs now demands more general skills such as the capacity to communicate (increasingly this includes proficiency in other languages), an ability to work in teams, diagnostic skills and willingness to take responsibility; these skills are known as the "New Pedagogics" or social skills in Germany (see Rees 1990).

Some of these skills, such as communication, are often regarded as skills that women excel in, as witnessed by their relative success in personnel management and the caring industries. Indeed communication may emerge as the key social skill. The successful application of NITs is already jeopardised by unintelligible manuals for personal computers, poor communication between engineers and software users and end-users, by companies buying expensive, unsuitable equipment that does not actually meet their specification and inordinate amounts of stress and frustration through employees'feelings of lack of control through their inadequate understanding of NITs (Ducatel and Miles 1990 : 119).

In Germany, training now addresses these elements that are essential to the effective integration of NITs into the workplace, but elsewhere, less attention has been paid to them, and NITs is still imbued with an exclusively technical ambience.

iii) The social Construction of Skill

The concept of skill is socially constructed, and there is a significant gender dimension to what we deem to be skilled, or unskilled (Philips and Taylor 1980). The power and status of job incumbents have an important impact upon the value we put upon the job in question and the extent to which we credit that job with a high level of skill content. Industrial muscle (through for example strong trade union organisation) and gender are crucial signifiers. In a highly segregated workforce, gender assumes vital importance in determining the skill component to be attached to a specific job. That perceived skill level is then reflected in the level of pay with which it is rewarded. This becomes crucial, as the discussion which follows will illustrate, in the undermining of women secretaries in particular, and the sets of expectations about their capabilities with regard to learning more advanced manipulations of NITs. Lane (1988) demonstrated the importance of gendering in determining what constitutes higher level competencies in clerical work. As a source of labour for training to fill high level skill shortages, women secretaries and clerical workers have rich

potential, but are entirely overlooked, largely because of their gender.

The social construction of skill depends not just upon which gender performs the task involved, but also on how those skills were obtained. Skills acquired through education, training or experience are valued and rewarded more than "talent" thought to be innate or skills learned on the job. Time served apprentices, however outmoded their skills, are respected and given the highest status in skilled work. Women in low level IT work tend to acquire their skills by other means, such as "sitting by Nellie" or in-house training : this method of learning skills tends not to be rewarded with a qualification. Moreover, employers sometimes use qualifications as a screening device, a short hand exclusionary mechanism, rather than identifying them as a requirement for a job in any related sense : young unemployed people during the 1970s and 1980s found that the level of qualifications required for essentially unskilled jobs crept up while the state of the labour market allowed employers to pick and choose.

Feminisation of a particular occupation or profession is seen to have the effect of deskilling it. Where certain professions such as law or medicine which previously excluded women altogether have admitted them, new patterns of segregation between men and women emerge between specialisms within that profession : women do not necessarily enjoy the status and pay and conditions that previously only accrued to men (this point is developed in the section on qualifications and segregation).

Conversely, areas of work can become defiminised. Wajcman (1991 : 158) reminds us that the very first computer programmers were women and that between 1940 and 1950, many women were engaged in programming, coding or working as machine operators :

> It was because programming was initially viewed as tedious clerical work of low status that it was assigned to women. As the complex skills and valuing of programming were increasingly recognized, it came to be considered creative, intellectual and demanding "men's work". Thus, depending upon circumstances, different cognitive styles may be characterized as "masculine" or "feminine" according to the power and status that attaches.

Where trade unions are weak or non-existent, women's work is more likely to be defined as unskilled or semi-skilled (Mitter 1986). But unions of course, are largely male dominated institutions (even where the majority of members are women); they can be instrumental in defending the status of skilled work remaining attached to men's jobs that have actually become deskilled. Industrial bargaining can be highly effective in maintaining differentials, despite changes in job content which undermine their rationale.

Classification systems used to describe occupations are skewed in favour of jobs performed by men : the degree of gradation calculated in skill level, and the detail in differentiation between, for example, welders of different materials is almost loving in its meticulousness. By contrast secretarial and clerical jobs, from

company executives' personal assistants through to copy typists and data entry clerks, are often afforded hardly any skill distance between them. This is not confined to the EC, in Australia, for example :

> ... the Metal Trades Act lists hundreds of classifications, many describing highly differentiated and often obscure tasks. The majority of women covered by this award fall into just two categories - process worker and machine operator. These classifications describe vastly different jobs which share the common characteristic of being performed often by women who have lacked industrial strength, whose demands have been constrained by the interests of more highly paid male workers to maintain pay and status relativities and who have no trade or technical qualifications.
>
> (Windsor 1990 : 144)

The value placed on work is receiving increasing attention because of the shift in equal pay legislation to assessing jobs of "equal value" (O'Donovan and Szyszczak 1988), because of the changes in skills required in the labour market as a result of new technologies, and because of the alleged growth in multi-skilling. Job evaluation schemes have had the effect of recognising the skill content of many jobs deemed unskilled or semi-skilled because it has been exclusively women who perform them. As different skills evolve when NITs is introduced, so new gendered patterns of ranking jobs in relation to each other and paying some workers more than others emerge. The inter-relationship between skill level and pay is muddied by the gender of the job occupants and their access to industrial muscle.

4. SKILL SHORTAGES IN THE NITs

The issue of skill shortages in the NITs was discussed at some length in the Bowen and Senker (1990) report; it is of course a complex notion depending to an extent on market forces, national societal effects (Maurice et al 1986) and regional variation. I propose here to summarise some of the most widely identified skill shortages relating to NITs in the EC and to introduce the issues surrounding women's access to those jobs.

Wellington (1989 : 156) has described six categories of "IT task" (there are other formulations) as follows :

(1) Systems analysts, engineers, software, engineers, designers,etc
(2) Programmers
(3) Management administration and planning
(4) Operators
(5) Secretarial, WP, stock control, clerical and office VDU users, etc
(6) Data Preparation, data entry etc,...

Women predominate in the bottom two categories. There are few routes of progression from those two bottom tiers to the top ones, but more mobility between the top ones. Points of entry to the more

highly skilled jobs require different sets of qualifications and work histories : in effect a women would need to leave the organisation, acquire appropriate qualifications and re-enter (if possible).

The areas of IT already experiencing the most severe shortages are as follows :

(1) highly skilled, state of the art "technicists";
(2) **"hybrids"** or **"business analysts"**, who need to be able to understand what new technologies can offer and how to use them; and
(3) **business managers**, with responsibilities for recruitment and patterns of work organisation.

While technicists clearly comprise an important group to develop and sustain NITs, it is also the case that increasingly, there are shortages of people who combine an understanding of NITs with other skills. This is the case not simply for those people, the majority of workers indeed, who increasingly need to use NITs as part of their jobs, but those in the business of developing and running systems as well. Workers will need to combine an understanding of NITs with the new pedagogics. These three groups are considered in turn.

i) Technicists

The current IT "skills crisis" is largely in high and medium level IT jobs such as systems programmers, network controllers and in application system development, for which graduate recruitment of people with technical qualifications is the main point of entry. These are what Ducatel and Miles (1990 : 156) call the "industrial heartland IT skills". Both Germany and Ireland have specialised in the education and training of such people. The difficulty faced by Ireland has been retaining them : if job opportunities commensurate with their skills are not available locally, they will emigrate to Germany or elsewhere such as Japan and the US. Even in Germany however, where there are job opportunities for people with high level skills, there are recruitment difficulties and companies have to address the issue of making jobs attractive enough for the incumbents to want to stay (see Rees 1991).

Women's access to such high level NIT employment has been restricted. Where single point of entry systems operate in recruitment to such posts, their lack of appropriate degree qualifications has traditionally acted as a barrier. Women graduates are clustered in arts and social science subjects and are less likely to have the relevant subject examination passes (for example mathematics) that would gain them entry to computing and other IT courses at degree level. The lack of routes of progression in both in training systems and in employment between low level and high level IT also acts as an impediment to women's entry.

High level IT work has been characterised by increased credentialism, that is, the demand for qualifications as an entry criterion, and this in part explains the dearth of women.

But even where multi-portal entry systems operate, that is, where it is possible to enter the organisation further down the hierarchy without such qualifications, (say in the middle tiers) and work one's way up through internal promotion, it is noticeable that women who do reach the higher echelons tend overwhelmingly to have gained access through their qualifications, rather than through internal recruitment in what is inevitably a male culture and environment.

The development of NITs may be triggering the shake up of rigid patterns of segmentation and gender segregation in some sectors such as retailing and financial services, but that does not on the whole apply to IT work itself. The ethos and culture of computing and engineering in particular remain male dominated. Some of the reasons for this, and its effects are discussed later.

ii) "Hybrids" or "Business Analysts"

There is growth in demand for people to do what used to be called "hybrid" jobs, which combine business management skills with an understanding of IT : such people are now more usually referred to as "busines analysts". They have an understanding of both NITs and possess administrative, strategic and entrepreneurial skills (Ducatel and Miles 1990). The lack of such people has been identified as a main constraint upon the take up of new technologies in the manufacturing sector in the UK (Christie et al 1990). One major "core-IT" company emphasised the need for people with general, all round skills, rather than simply highly specific IT skills thus:

> A crucial change in our requirements for personnel and their skills is needed for the future. With specific exceptions (such as engineering) we will not need people with specific IT skills. What we will need are people who can communicate with our customers, interpreting their needs for the system specifiers, who can educate our customers in the benefits of IT and who can appreciate the role of IT generally in the business world. In short, we will be looking for suitable attitudes and a sound broad-based education, not formal skill-based qualifications.
>
> (Seward-Thomson 1987 : 25)

Virgo (1991) of the Women into IT Campaign (run by major British employers and supported by the Department of Trade and Industry) has illustrated how the main strategy adopted by employers (not just in the UK) to fill the shortage of business analysts is to "convert" technical people (of whom there is already a shortage), thereby fuelling further problems in the future. Moreover, such people were originally hired for their technical qualifications and skills, rather than the personal aptitudes and understanding of business necessary to do the new tasks. They do not universally make a successful transition. NIT skills comprise only part (some commentators have suggested as little as 30 %) of the business analyst's job; dealing with people and communication skills are highly important.

Nevertheless, the job has become embued with a "techie" culture which discourages people who do not regard themselves as first and foremost technical people. The "techie" culture almost takes a pride in obfuscating the NITs, in effect manipulating discourse to "own" them and to exclude other, for example through use of language peppered with jargon and sets of initials. An aura of technical sophistication and impenetrability can surround those responsible for managing highly expensive systems. However, business analysts need in essence to communicate the benefits of the systems to those who can accrue advantage from them; to share rather than possess the technology.

Virgo argues that to fill shortages in both high level technical jobs and of business analysts, recruitment nets need to be widened. The two main obvious groups are non-technical graduates (for example arts and social science graduates), and existing staff in secretarial and clerical grades. Siemens have been retraining unemployed social science graduates in Germany. Secretaries tend to be overlooked, they are a grossly under-estimated group :

> The evidence is that those who can make effective use of a full WP package have little problem learning most of the modern database packages and those who can make effective use of dBase II or III can learn most system generators without too much difficulty.
> Taking charge of departmental computing on a Unix Box or an AS 400 is the next logical step.
>
> (Virgo 1991 : 4)

Secretaries often provide a "chauffered" use of new technology; they "drive" the technology for their bosses by managing spread sheets, electronic mail and computerised diaries. Both groups, non-technical graduates, and secretaries and clerical officers are of course substantially made up of women. Virgo argues that computing and IT generally has a bad image as far as women are concerned, and that employers, overwhelmingly male, tend not to associate women with such potential skills or to recruit them. As a consequence, career routes within the organisation for secretaries barely exist, and women arts and social science graduates are unlikely to consider or be considered for IT or business analyst posts. The social construction of skill hence undermines the appreciation of the potential that women can make to an organisation.

iii) Business Managers

It is essential that business managers appreciate the potential that both NITs and human resources can offer. All too often, without that knowledge and understanding, existing patterns of division of labour are simply superimposed upon new technology, introducing in effect a form of Taylorism in the office, just at the time when it is being superseded in the manufacturing sector. Managers are often not fully aware of the potential that IT has to offer and are unwilling to take the time to be trained themselves - or to admit to the deficiencies a need for training implies. This is particularly the case in small to medium size enterprises which

employ the majority of the EC's workforce. This is arguably the most difficult skill shortage to address because there is less willingness to admit that there is a problem and such enterprises are less likely to have a training budget or culture.

Vickery (1990) identifies a number of issues which are critical to the development of an IT strategy which hinge on lack of familiarity with the implications and possibilities of IT on the part of business managers. He particularly points to their lack of understanding of the IT planning process; cultural barriers between business and IT directors; problems in the total understanding of database and systems management issues, and using IT effectively to deliver customer satisfaction (Vickery 1990 : 15).

One consequence of such partial understanding is the persistence of existing gendered patterns of division of labour. In a highly segregated pattern of use, typing pools become data entry or word processing pools, but offer employees less job satisfaction. Such deskilled jobs are demotivating, particularly when coupled with poor remuneration, no prospects of advancement and the risk of repetitive strain injury. Moreover, greater expectations of the incumbents of such jobs, because of the new technology (job enlargement rather than job enrichment) can put enormous stress on such workers, particularly when machines are programmed to record key strokes and targets are set. In such work situations, it is women who lose out, it is their jobs on the whole which become deskilled. The organisation loses too however, as there tends to be a fast turnover of staff and recruitment costs are incurred repeatedly. In a period of labour shortage, such jobs may well be increasingly difficult to fill. Introducing or upgrading IT should ideally involve wholesale job redesign.

Training business managers needs to involve not simply alerting them to the scope of new technology for their organisation, but training in destereotyping and equal opportunities. Some major international companies have begun to introduce such training for the middle and senior management, in the context of staff retention difficulties and skill shortages.

5. WOMEN'S EMPLOYMENT IN THE NEW INFORMATION TECHNOLOGY

This section examines some of the processes which lead to women's under-representation in the NITs generally, and in high level IT skill shortage areas in particular. It focuses on girl's subject choices in school, training and qualifications, employers' recruitment and promotion practices, internal labour markets and the masculinisation of technology.

i) Gendered Subject Choice at School

Children by an early age can identify which jobs are for men and which for women and their likely role in the family; this knowledge informs their own sense of identity and worth, it influences decisions they make about what subjects to take at school, their

responses to further education and training opportunities and their expectations of their role in the family. In short, gender determines the investment that young people are prepared to make in their own "human capital", that is the qualifications they will seek to acquire, and the extent to which they will choose a job or career which will sustain them and perhaps a family for life. Girls' expectations of their futures as mothers affect their attitudes to training and employment.

Evidence from all member states (see Rees 1990) illustrates that gender plays a significant role in determining what subjects girls and boys take at school and in post-compulsory education and training. It is the single most important determinant of option choice. Despite a plethora of special initiatives in a number of member states designed to encourage girls into, for example science and computing, sex stereotyping in subject choice remains highly potent. As a recent evaluation of special projects in the EC reported that :

> Students' attitudes to technology were found to be very much along traditional lines : boys prefer technical tasks; girls lack confidence; girls are reluctant to use computers; boys display dominant behaviour in the computer room.
>
> (Taskforce for Human Resources, Education, Training and Youth 1990 : 4)

Why girls show a particular aversion to computing has been the subject of considerable debate. Some writers have associated their introduction to schools, and immediate colonisation as male territory as one source. Despite the fact that computers can trace their ancestry through both languages, communication and logic (arguably identifiable as "female" areas as well as science and mathematics (more overtly "male" subjects), schools have tended to locate computers within maths departments, which clearly signifies male terrain. An EC initiative on the added value of Community Measures to the introduction of NIT in education included new options within the science, or mathematics curriculum, or efforts to recruit additional learners to existing "computer science" courses. (Taskforce for Human Resources, Education, Training and Youth, 1991 : 1.3)
Computer studies tends to be taught by male maths teachers, even though it is now widely recognised that a predilection for maths is not an essential prerequisite to computing.

Computer use in schools was found to be male dominated throughout the education systems of 19 separate countries in a recent, highly detailed study (Pelgrum and Plomp 1991). Less than 50 % of the schools in all but the French speaking countries in the study had a special policy concerning computing and gender issues. Where there was such a policy, it tended to be directed to training female teachers in computing education, in other words, fostering female role models. The study showed that there were fewer women responsible for computing in schools that there were Principals in charge of the schools.

Wajcman (1991 : 154) explores the thesis that computer games convey messages to girls that computing is not for them :

> Games are the primary attraction for children. Given that it is men (often computer hackers) who design video games and software, it it hardly surprising that their designs typically appeal to male fantasies. Many of the most popular games today are simply programmed versions of traditionally male non-computer games, involving shooting, blowing up, speeding, or zapping in some way or another. They often have militaristic titles such as "Destroy all Subs" and "Space Wars" highlighting their themes of adventure and violence. No wonder then that these games often frustrate or bore the non-macho players exposed to them. As a result macho males often have a positive first experience with the computer; other males and most females have a negative initial experience.

She argues too that video games have taken over from pin-ball machines in amusement arcades, which have always been regarded as male territory, with girls as on-lookers. The new technology has been clearly identified as part of male culture.

There is a literature which argues that boys and girls have a different learning style towards computing : it suggests that girls want to "understand" while boys "seek to master" computers (Davidson and Cooper 1987; Dick and Faulstich-Wieland 1988).

There is not the space to explore the evidence here, but one of its conclusions is that there should be single sex computer clubs in school. This may be desirable for other reasons, discussed below.

ii) Qualifications and Segregation

Lack of appropriate qualifications has always been held to explain in part why women do not secure access to certain professional jobs, particularly those in the NITs. As professions seek to upgrade themselves, they restrict entry, and insist upon recognised qualifications before granting membership of a professional institution, without which it is difficult to practice. Insistence on more formal qualifications can be helpful to women in theory : the criteria are clear, and if satisfied, access to the profession is difficult to deny. This process is known as credentialism. There has certainly been an increase in women's access to the professions with the growth of credentialism. However, Crompton and Sanderson (1990) in their studies in France and the UK have shown that while women may secure access to male dominated professions by acquiring the necessary qualifications, patterns of segregation merely emerge *within* them. So for example, in medicine, women are confined to the low prestige specialisms, and have little prospect of advancing further up the hierarchy.

Part of the reason for this is that the profession will make little concession to women's particular set of domestic responsibilities. Women who do succeed in a male dominated field, and there are now a number of books of interviews with such "tall popies", as they are known in Australia (Gerver and Hart 1991; Mitchell 1984; Watson 1989), reveal that they tend to be child-free and have linear careers. In other words, their career patterns are like those of

men : they take no career breaks for child bearing and rearing, they are able to move for a promotion, and they can accommodate the needs of a "greedy" institution (Kanter 1976) which demands they work long hours and prioritise the needs of the job over any personal commitments.

While such women may differ from male colleagues in that they are unlikely to have the bonus of a partner who will undertake domestic responsibilities for them, and they will have had to choose between a successful career and children rather than enjoy both, to all intents and puproses they are like men; it is they who have accommodated the employer rather than vice versa. As there is inevitably a limit to the number of women who choose this option, who choos8e in effect a career rther than a family, so women's access to the upper echelons of such male dominated professions when so structured, will remain modest. Clearly, few children are likely to be socialised in such families, by definition !

Given this pattern, it is clear that training and education systems alone cannot ensure better access for women to areas where there are currently skill shortages. Practices of discrimination against women by employers are an important ingredient in the mesh of social processes which perpetuates and recreates segregation in the NITs, as in other male dominated arenas.

iii) Discrimination in Employers' Recruitment and Promotion Practices

Gender is clearly used as a screening device during employers's recruitment processes as Collinson et al (1990) among others have demonstrated all too clearly. Employees themselves recognise which jobs are men's and which women's, and share commonly held perceptions about the relationship between technical skill and gender; they therefore collude to a greater or lesser extent.

Collinson et al (1990) examined the recruitment process in a various sectors in the British economy, but there is no reason to believe that the findings are in any way peculiar to Britain. They identified a set of rationalisations used by employers to justify appointing a man to a position normally held by a male, even when an adequately or even better qualified woman was interviewed for the post. These include justifications along the lines that the rest of the workforce would not like it : it upsets the familiar gendered division of labour; that her family would not accommodate the commitment that she would have to give to the firm, she is not as serious about work as the successful candidate would need to be; that customers would not feel confident about dealing with a woman and so on. Such explanations and rationalisations are rooted in an ideology of the family and stereotyped roles within it of a "bread-winner" and "home-maker". Should a woman apply for a post that needs the services and commitment of a lean and hungry bred-winner, then not appointing her is normalised and rationalised in terms of that ideology and those roles, regardless of the circumstances of the specific candidate. Employers' own contribution to the perpetuation of a gendered workforce remains oblique to them.

These rationalisations are dependent upon an ideal of family life that is increasingly far from reality, given the increase in dual earner households and the rise in single parents. Women are discriminated against as a category. The use of male networks and gendered internal labour markets similarly disadvantages women applying for "men's" jobs and keeps them segregated in "women's" work.

iv) Internal Labour Markets and Exclusionary Mechanisms

A major difficulty facing women in particular, and specifically in low level IT work, is that employers tend to have tiered recruitment strategies, with very few opportunities for movement up the organisation. Women who join an enterprise in low level IT work face extremely short ladders : there is little prospect of further training and promotion within the company. In some industries however, internal recruitment policies are increasingly being fostered. On the face of it this is should assist women, given that fewer acquire the relevant qualifications. They may be able to enter the organisation lower down and work their way up. However, such policies tend to perpetuate existing gender divisions, in IT work in particular (which has been largely unscathed by the climate of equal opportunities); it is difficult for women to work their way up within the organisation.

Of particular concern in the consideration of NITs skill shortages is the growing use of internal labour markets for recruitment for business analysts. A number of studies have sought to deconstruct mechanisms of exclusion of women from male territory or "property in positions". While historically there have been overt exclusionary mechanisms (for example marriage bars and career grade bars), these have now been removed by the force of law and replaced with more indirect forms of exclusion. These include selection procedures which prioritise seniority and unbroken service records and do not credit time out of the labour force. Similarly, women are less likely to respond than men to "hands up" promotion schemes : they are thought to do better out of annual staff appraisal schemes. The utilisation of the "old boy network", from which women tend to be excluded, also plays a role in social exclusion. In the development of networks, freemasonry clearly exludes women directly, but the drink in the bar after work, the conference circuit, the shared interest in male sports which men can feel comfortable talking about to male business acquaintances, all mark men and women off as separate social categories. Male mentors are unlikely to sponsor women and there are few women at the top to sponsor others. The lack of female role models to encourage younger women acts as another deterrent to aspiring newcomers.

The discourse of management has been shown to be embued with a male centredness which renders women inappropriate candidates. In other words, the male is taken as the norm or yardstick, against which women have to measure. The very terms used to describe what a company may need in a successful manager include words such as "keen", "dynamic", "thrusting", "aggressive", "hungry", "authoritative" (Skinner and Coyle 1988) : these do not fit women as a perceived social category easily. As Crompton and Sanderson argue (1990 : 115), "Women who do have power are widely viewed as mean,

bossy and dictatorial, thus further lending a justification for their exclusion from power which might be supported by men and women".

In short, the senior tiers of organisations tend to be organised upon a set of expectations which in effect preclude women. By making the criteria for recruitment more specific, for example by identifying qualifications as one such criterion, women are in a better position to compete. Accommodating the woollier criteria, however, such as informal networks, "fitting in", being one of the "lads", is clearly more difficult. A growing response to this has been single sex management training courses for women, which have tended to focus, tellingly enough, on assertiveness training, confidence building, dealing with sexual harassment, time management and so on. In other words, such courses are dealing not specifically with management skills per se, but with the imperative of dealing with and coping with every day life in an organisation where to be female is to be at a disadvantage, both professionally and personally.

Strategies developed by women, for example in engineering, fall into two main categories : some women subsume their gender identity beneath that of being an engineer; they in effect become "one of the lads". Others seek to sustain their feminine identity, and are treated as a "special case" by the male engineers : the expectations of them are not the same; they become in effect patronised and ghettoised within the industry.

Exclusionary mechanisms clearly operate both within the IT industry and elsewhere in those organisations increasingly effected by the introduction and development of NITs. There are specific difficulties facing women seeking entry to the skill shortages identified above, however, because of the association of technical competence with the male gender.

v) The Masculinisation of Technology

There is a powerful association between men, machinery and the concept of technical competence : this has been described as the "masculinisation of technology". This is illustrated through the eyes of an ex-miner in the following extract from an interview with a training officer of an electronics plant in South Wales (2) :

> ...young males will do the work which is very similar to the women's work. But it is very difficult to put a forty year old man, who's come out of the pits, on a fiddly little job, especially amongst a group of women, but a young bloke won't bother. It's just a difference of perception over the years. You can attempt to make the jobs more masculine by putting them on machines. It could be even a more simple job than the woman is doing on the line, but as long as he's using that machine, something powerful, he'll assume that that's a man's job and he'll do that.

While it may be acceptable for young men to do "women's work", rates of pay will ensure that they soon move on to more lucrative

job. Women's earnings need to be subsidised by a partner's "family wage".

New technology is perceived as young, white, male territory, and this operates as a barrier to the training and recruitment of women and some men. It means that the pool of people from which people can be recruited to fill skill shortages is circumscribed, and it ensures that the ethos of NITs, as reflected in computer games, and the use to which they are put, is self-perpetuating.

Limitations are imposed upon technically competent women in a number of workplaces. As Cockburn (1986 : 185) says "For a woman to aspire to technical competence is, in a very real sense, to transgress the rules of gender". In her study in the UK of women and men working in three fields where new technology had been introduced (warehousing, manufacture and hospital X-ray), and in the engineering firms which developed these technologies, Cockburn (1985) revealed that gender divisions remain clear cut. Even where women learned new technologies, men continued to be the "technologists" and women the low paid "operators".
She argues that :

> Whatever opportunities the new technologies appear to offer the operator, they do not in themselves enable her to cross a certain invisible barrier that exists between operating the controls that put a machine to work and taking the casing off it in order to intervene in its mechanism. This is the difference between an operator and a technician or engineer. For an operator there is always someone who is assumed to know better that she about the technology of the machine on which she is working. That someone is almost invariably a man.
>
> (Cockburn 1986 : 181)

Wajcman (1991 : 158) argues cogently that technology is a cultural product which is integral to the constitution of male gender identity. The female gender identity is the negation of that of the male, and so the stereotyped cultural ideal of a woman, in the ideology of sexual difference, must be technically incompetent. She underlines the significance of this technological "ownership" as a source of power in gender relations.

The association of masculinity with technical competence and control, and its obverse in women is related to the social construction of skill which is then translated to levels of pay.
The technical competence required in "women's jobs" both at home and in work is often undervalued. While jobs and the skills associated with them naturally come and go with the development of new technology over time, the relationship between "women's work" and low value being attached to the "skills" involved in doing it, has remained constant.

6. WOMEN'S TRAINING AND THE NITs

Education and training systems unwittingly reinforce the pattern of polarisation in the labour market through the lack of routes of progression, particularly from low level IT into high level IT courses. Women are unlikely to possess appropriate qualifications to enrol on degree courses leading to high level IT work. In short, VET systems need a radical rethink in order to open up routes for women, and older women in particular, to fill skill shortages in NITs.

This section seeks to underline the male centredness, or androcentricity of much training provision, which discourages women from crossing the threshold, particularly into what are perceived of as male domains. It looks at the needs of two groups of women who would benefit from training, women returners, and women already employed in low level IT work. It focuses in particular on confidence building and women-only training.

i) The Androcentricity of Training Provision

Training provision has tended to be androcentric, that is geared to the needs and characteristics of men, and in particular young men. Training funders and providers need to adjust to the needs of a growing number of new clients, in particular, older women. The prioritisation of male training needs, and the shaping of funding and provision around assumptions that only fit at best, most men, reflect the same kind of sex-typing which govern patterns of work organisation. Employers have often been criticised for lack of flexibility : they presume employees are available for overtime, have access to private transport or are sanguine about using public transport after dark, and so on. Much the same criticisms can of course be male of training providers. Given that women have less access to employer funded training, such a mismatch between women's needs and provision helps to cement patterns of job segregation by gender.

It is instructive that many of the women's workshops in the EC's IRIS network have been started by women, with European Social fund (ESF) funding, in response to the lack of suitable provision for disadvantaged and migrant women in particular. They have been tailor-made to suit such women's needs.

ii) Women Returners' Training Needs

The development of opportunities to learn substantive skills in an appropriate setting is one small part of the package of requirements for transition from child-rearing to employment. Other factors which have a crucial role in that process of returning include <u>confidence building</u> and accommodating continuing <u>child-care</u> commitments. Moreover, to be effective, training provision needs to take on board the fact that many women have very poor access to <u>resources</u> they can use for themselves : this restricts their ability to pay for training, or indeed, even to get to it. Finally, employers' recruitment practices, and in particular their use of social attributes as currency, and their mobilisation of informal

networks and internal labour markets to recruit and promote combine to off-set the supposed advantages to a returner of having undertaken a course. Training for returners needs, therefore, both to open up knowledge of and access to appropriate networks and information about how individuals are selected for jobs.

Much of the focus in returner courses has been in learning to recognise skills and achievements that are not normally valued. Some courses are seeking to credit such achievements formally through Accreditation of Prior Learning schemes. Courses then go on to assist in decision making about the future. The recognition of existing skills (known in France as a *billet de compétence*, or vocational "check-up") can be important for establishing confidence, undermined by years out of the labour market.

iii) Confidence Building

At a conference held in CEDEFOP, the European Commission's Centre for the Development of Vocational Training in Berlin in December 1988, researchers on training for women from all the member states unanimously agreed that extremely low levels of confidence of women trainees was the most important training issue for returners : the particular skills imparted were wholly secondary to the initial need to confidence build. People lacking in confidence are not at their most receptive. Courses for reasonably confident people already exist in each member state : women without that confidence are in effect excluded from such opportunities for training. Lack of confidence is probably one of the factors in many women's willingness to accept low level work, the tendency to opt for typically female work, and the reluctance to venture into the "male" world of technology.

Women in low skilled work also experience confidence problems, as do women working in a man's world. Women only training has been developing rapidly as a response to this.

iv) Women-only Training

Women-only training has been developing for a number of target groups. In Germany for example, employees are increasingly being targeted. As elsewhere, fewer girls than boys take computing and mathematics at school and the number that do diminishes rapidly with age (Schiersman 1988). Hence fewer girls have the necessary qualifications to be taken on as apprentices. Gender segregation in German high-tech companies is therefore marked. Some companies have introduced women-only training in response to this for their employees. Messerschmitt-Bolkow-Blohn, which specialises in high-tech products in the defence and aerospace industry, have women-only training for semi-skilled female workers, secretaries, women in technical and skilled "male" jobs, and for women returning to the firm (Langkau-Herrmann 1990). AEG offer women-only training in electronics : the trainees do not get the full qualification but they can enhance their pay and get better jobs within the company.

Women-only training for women managers has already been mentioned : this can be useful for filling shortages of both business analysts and business managers. Some multinational companies are introducing such training for their female "high fliers" who can prove invaluable for fostering female networks, which in turn may lead to mentors and role models developing.

One of the main benefits of women-only training is in providing a "safe" environment in which women feel able to learn. Women-only training courses for returners in the UK report success in improving confidence levels, according to both tutors and trainees, although methods of measurement remain understandably crude. Murphy and Mullan (1989 : 6) report that trainees from both the Camden Training Centre in London and the IT studies course in Jordanstown, N. Ireland :

> ... spoke eloquently about the growth of self-confidence and ability to communicate effectively as being just as valuable as the development of skills in Information Technology.

Some trainees are not necessarily particulary attracted by the idea of women-only training at first, indeed some are suspicious of it, but the nevertheless come to value it through their experience of it (Essex et al 1986a : 18).

MacNamara (1990) reports that all her cohort of trainees at the South Glamorgan Women's Workshop (SGWW) in Wales, which trains disadvantaged women in low level IT skills, felt that if men had been there, they would not have felt so relaxed about using "male tools and instruments". Individual trainees said (MacNamara 1990 : 48) :

> "I was going through a divorce ans would cry at the most strange times. I only got through it because of the other women's support."
>
> "It was my "island", a place where I could be myself, believe in my abilities."
>
> "I know I gained the skills to use the computer, but they would have been no good if I hadn't been confident in myself."

All MacNamara's respondents stressed their increase in confidence : "it was without doubt one of the most important factors which enabled women to progress to employment or to further training" (p51). Women-only training projects address the issue of confidence building as part of the curriculum (see Essex et al 1986a; 1986b; Murphy and Mullan 1989). Indeed, "social and life skills" is now a requirement stipulated by the ESF for such courses. In response to trainee demands at the SGWW, this element of the course increasingly focuses upon assertiveness training and preparation for working in modern offices. In a course in run by the University of Ulster in Jordanstown, trainees reported :

> "I am much more assertive. I am a person to be respected. I felt used as a person before. This course has developed me. I can relate better to others."

> "I have much more self-knowledge and am more at peace with myself."
>
> Did an enormous amount for my confidence... I'll take on anything now.
>
> (Murphy and Mullan 1989 : 17)

v) Female Tutors for NITs

Women-only training can be particularly useful for training in IT, and female tutors are important to bolstering confidence, both in their capacity as role models and because they are deemed less intimidating. Cockburn (1983) demonstrates the power of job gendering which means that we feel uncomfortable seeing women with "gender inappropriate tools". MacNamara's cohort stressed the importance of having women tutors to the development of their own confidence :

> "I was frightened of the computers but no-one put me down, a woman tutor gave me support, she didn't laugh."
>
> "I didn't feel daft, asking a woman tutor which bit of wire went where."
>
> "I couldn't have coped with male tutor. I would have felt intimidated."

The development of confidence is by now well recognised as an essential issue to be tackled by women returning to work, even for some highly qualified women on refresher or updating courses. Without it, learning capacity, so important to NITs, is impaired.

7. CONCLUSION AND RECOMMENDATIONS

VET systems and employers are not geared to the needs of women as parents, as less qualified individuals, and as strangers in a technological world dominated by men. Their capacity to fill skill shortages in NITs is impaired by this. At the same time, there will be a greater dependence upon women in the workforce in the future, and the "new pedagogics" mean that women are ideally suited to fill those skill gaps. There is a clear need therefore for policies at a number of levels to bring women and NITs skills shortages together. This report has attempted to identify key blockages in the system. This final section seeks to suggest where policies might impinge to make IT a more woman friendly arena. In some countries, regions and localities, of course, some of these ideas are already being implemented to a greater or lesser extent.

i) School based education

- degendering computing games;
- disassociate computing and maths and science; cross curricular use of computers;
- single sex computer clubs

- exchanges and documentation of examples of best practice from schools with a high proportion of girls entering NITs further education and training.
- avoid gender bias in curriculum materials
- ensure girls have equal access to computers
- train teachers and guidance counsellors in gender awareness, particularly in the NITs

ii) VET Systems

- conversion courses for arts and social science graduates;
- women-only training;
- more female tutors in technology training;
- training courses for trainers in the new pedagogics;
- training courses for women technology trainers;
- child-care facilities
- out-reach training for women at home with small children;
- equal opportunities training for technology trainers.

iii) Employers

- positive action schemes to enable highly trained women to remain with the enterprise or return to it if they have children
- women-only management and technology continuing training;
- conversion courses for women with low level IT skills;
- opening up of routes of progression within companies from jobs traditionally seen as dead-end, such as secretarial work;
- work organisational counselling for employers enhancing their technology;
- documentation of best practice of work organisation and exchange visits;
- training for business managers in work organisation and destereotyping.

8. REFERENCES

Berry-Lound D (1990)

"Towards the Family-Friendly Firm", Employment Gazette, Vol. 98, No 2, pp 85-91

Bertrand O and Noyelle T (1988)

"Employment and Skills in Financial Services : a comparison of banks and insurance companies in five OECD countries" Services Industries Journal, Vol. 8, pp 7-18.

Blaazer C (1988)

"The Top Jobs That Are Just Waiting For The Right Women", The Times, 7th January

Bower P and Senker J (1990)

"Skills Implications of Technical Change in Core IT Sectors" Report to Taskforce of Human Resources, Education, Training and Youth, Employment and Training Perspectives in the New Information Technologies in the European Community Project, Brighton : Science Policy Research Unit

Christie I, Northcott J and Walling A (1990)

Employment Effects of New Technology in Manufacturing, London : Policy Studies Institute

Cockburn C (1983)

Brothers : Male Dominance and Technological Change, London : Pluto Press

Cockburn C (1985)

Machinery of Dominance : Women, Men and Technical Know-how, London : Pluto

Cockburn C (1986)

"Women and New Technology : Opportunity is Not Enough" in K Purcell, S Woods, A Waton and S Allen (eds) The Changing Experience of Employment : Restructuring and Recession, London : Macmillan

Cohen B (1990)

Caring for Children : The 1990 Report London : Family Policy Studies

Connor H and Pearson R (1986)

"Information Technology Manpower into the 1990's" Brighton : Institute of Manpower Studies

Crompton R and Sanderson K (1990)

Gendered Jobs and Social Change, London : Unwin Hyman

Davidson M J and Cooper C L (eds) (1987)

Women and Information Technology London : Wiley

Dick A and Faulstich-Wieland H (1988)

"Der hessiche Modelliversuch "Madchenbildung und Neue Technologien"", in LOG IN 8, No. 1

Ducatel K and Miles I (1990)

"New Information Technologies and Working Conditions in the European Communities" Report to Taskforce of Human Resources, Education, Training and Youth. Employment and Training Perspectives in the New Information Technologies in the European Community Project, Manchester : University of Manchester, and Brighton : Science Policy Research Unit

Essex S, Callender C, Rees T and Winckler V (1986a)

New Styles of Training for Women : An Evaluation of the South Glamorgan Women's Workshop, Manchester : Equal Opportunities Commission

Essex S, Callender C, Rees T and Winckler V (1986b)

An Evaluation of South Glamorgan Women's workshop Cardiff : South Glamorgan Women's Worshop

Eurostat (1988)

Rapid Reports : Population and Social Conditions, Luxembourg : Eurostat

Freeman C and Soete L (1990)

"Macro-Economic and Sectoral Analysis of Future Employment and Training Perspectives in the New Information Technologies in the European Community" Executive Summary, Synthesis Report and Policy Conclusions and Recommendations, Reports to the Taskforce of Human Resources, Education, Training and Youth. Employment and Training Perspectives in the New Information Technologies in the European Community Project.

Gallie D (1991)

"Patterns of Skill Change : Upskilling, Deskilling or the Polarization of Skills" Work Employment and Society, Vol. 5, N° 3, pp 319 - 351

Gershuny J, Miles I, Jones S, Mullings C and Wyatt S (1986)

"Time Budgets : Preliminary Analyses of a National Survey" Quarterly Journal of Social Affairs, Vol. 2, N° 1, pp 13-39

Gerver E and Hart L (1991)

Strategic Women : How Do They Manage in Scotland Aberdeen : Aberdeen University Press

Kanter R (1976)

Men and Women of the Corporation New York : Basic Books

Lane C (1988)

"New Technology and Clerical Work" in D Gallie (ed) Employment in Britain, Oxford : Blackwell

Langkau - Herrman M (1990)

"In-company Vocational Training Programmes of Messerschmitt-Bolkow-Blohm GmbH (MBB), Berlin, CEDEFOP

MacNamara F (1990)

Woman and Training, Cardiff : University of Wales College of Cardiff, MSc Econ in Women's Studies, unpublished dissertation

Maurice M, Sellier F and Silvestre J-J (1986)

The Social Foundations of Industrial Power London : MIT Press

Moss P (1990)

"Childcare in the European Communities 1985-90", Women of Europe Supplement, No 31, Brussels : Commission of the European Communities

Mitchell S (1984)

Tall Popies : Successful Australian Women Talk to Susan Mitchell, Victoria : Penguin

Mitter S (1986)

Common Fate, Common Bond : Women in the Global Economy, London : Pluto Press

Murphy P and Mullan T (1989)

"Time for Women in IT", Jordanstown : Department of Adult and Continuing Education, University of Ulster

O'Donovan and Szyszczak E (1988)

Equality and Sex Discrimination Law, Oxford : Blackwell

OECD (1986)

New Information Technologies : a challenge for education, Paris : OECD

Pelgrum W J and Plomp T (1991)

The Use of Computers in Education Worldwide, Oxford : Pegamon Press / International Association for the Evaluation of Educational Achievement

Philips A and Taylor B (1990)

"Sex and Skill : notes towards a feminist economics", Feminist Review, N° 6, pp. 79 - 88

Rees T (1989)

"Monica Wants to be an Engineer" : Schoolgirls and the Labour Market", Planet : The Welsh Internationalist N° 71, pp . 3-7

Rees G (1990)

"New Information Technologies and Vocational Education and Training in the European Community : The Challenge of the 1990s' Report to the Taskforce of Human Resources, Education, Training and Youth, Employment and Training Perspectives in the New Information Technologies in the European Community Project, Cardiff : School of Social and Administrative Studies, University of Wales, College of Cardiff

Seward-Thompson B (1987)

"Attitudes in the IT Industry - the key to the future", Information Technology and Public Policy, Vol. 6, pp. 25-7

Schiersmann C (ed) (1988)

Mehr Risiken als Chancen ? Frauen und Neue Technologien, Hanover : Instituts Frau und Gesellschaft

Skinner J and Coyle A (1988)

"Women at Work in Social Services" in A Coyle and J Skinner (eds) Women and Work : Positive Action for Change, London : MacMillan

Taskforce for Human Resources, Education, Training and Youth (1990)

Equal Opportunities and New Information Technologies, Brussels : Commission of the European Communities

Taskforce for Human Resources, Education, Training and Youth (1991)

"The Added Value of Community Measures Relating to The Introduction of New Information Technology in Education (draft communication), Brussels : Commission of the European Communities

Vickery K (1990)

"Impact of the Current Economic Climate on IT", London : PA Consulting Group

Virgo P (1991)

"The Key to Overcoming Your IT Skills Problems : The Case for joining the Women into IT Foundation", Farnborough : Women into IT Foundation Ltd (mimeo)

Wajcman J (1991)

Feminism Confronts Technology, Oxford : Polity

Walby S (1990)

Theorising Patriarchy, Oxford : Blackwell

Watson S (1989)

Winning Women : The Price of Success in a Man's World, London : Wiedenfeld and Nicholson

Wellington J J (1989)

Education for Employment : The Place of Information Technology, Windsor : National Foundation for Education Research

Windsor K (1990)

"Making Industry Work for Women" in S Watson (ed) Playing the State : Australian Feminist Interventions, London, Verso

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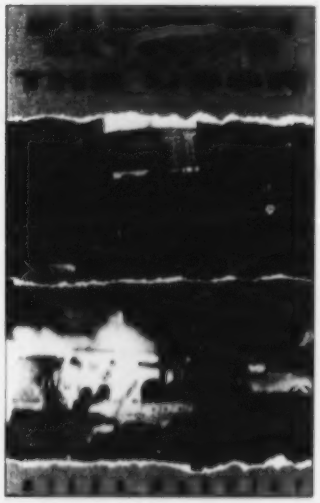

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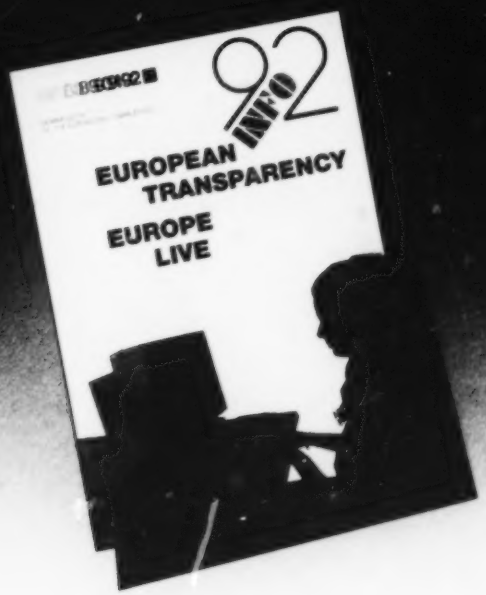

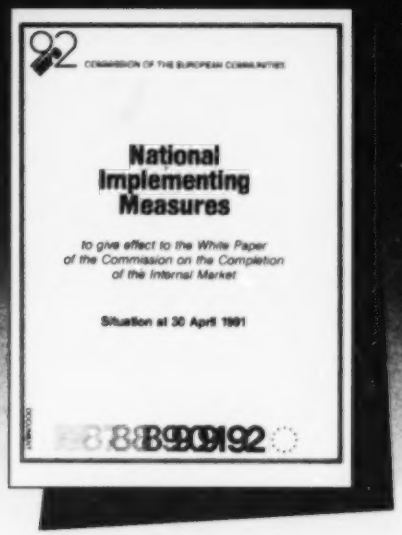
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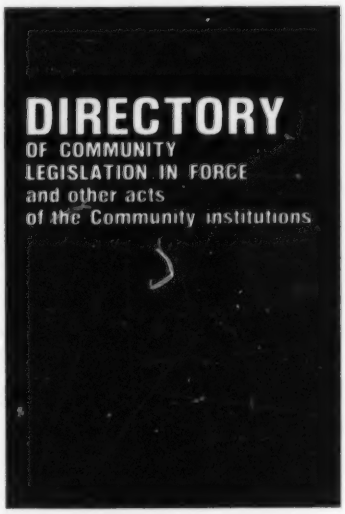

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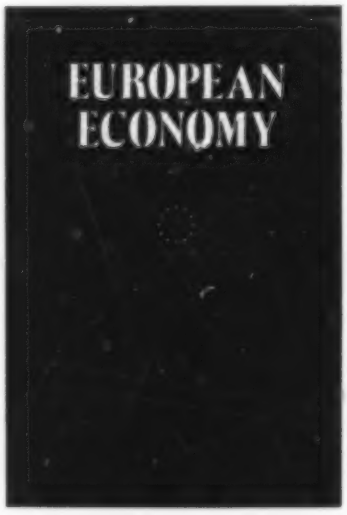

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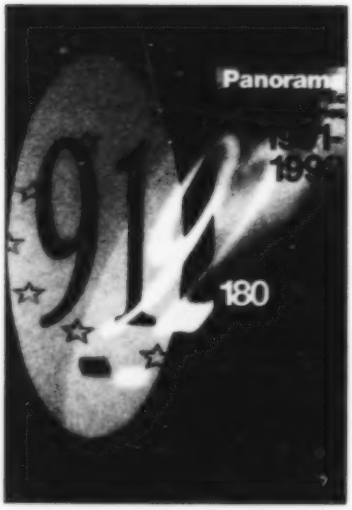

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